

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-003095**Date Inspected:** 27-Jun-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1330**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China

CWI Name:	Zhao Chen Sun and Hu Wei Qing			CWI Present:	Yes	No
Inspected CWI report:	Yes	No	N/A	Rod Oven in Use:	Yes	No N/A
Electrode to specification:	Yes	No	N/A	Weld Procedures Followed:	Yes	No N/A
Qualified Welders:	Yes	No	N/A	Verified Joint Fit-up:	Yes	No N/A
Approved Drawings:	Yes	No	N/A	Approved WPS:	Yes	No N/A
				Delayed / Cancelled:	Yes	No N/A
Bridge No:	34-0006			Component:	OBG and SAS Tower Fabrication	

Summary of Items Observed:

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.

The QA Inspector has randomly observed the following activities on sub-assembly Bays mentioned below;

Bay 2: 114M Tower Mock-ups, Plate Cutting, Rolling

This QA Inspector observed square edge machining of 8 -60mm thick x 400mm wide x 1010mm long plates marked P122(5pcs), P220(1pc), P405(1pc) and P242(1pc), which appear to be stiffeners were seen in progress. Drilling of 16-24mm diameter bolt holes on 300mm X 300mm hollow steel diagonal brace and on welded spacer beam W5.5 x 25.5" long for various floor beam sub-assembly still continues. Cutting of 70mm thick plate with various sizes and shapes marked SA105, SA235, P710 and SA368 seen in progress. Rolling machine and tower mock up 114M were both noted idle.

Bay 3: OBG side/bottom/edge panel

The QA Inspector randomly observed two ZPMC welder operators Lin Zhi Hong ID #062447 and Sun Ti Yu ID #054459 utilizing the Flux Cored arc Welding (FCAW) Process in the 2F (Horizontal Fillet) Position with gantry mounted welding apparatus and a 1.4mm diameter electrode, filler metal brand K-71TSR semi automatic to weld fillet between 3-open rib stiffener to deck panel DP009-001-001/002 and DP009-001-005/006 using ZPMC Weld Procedure Specification (WPS) WPS-B-T-4132. QA Inspector Lizardo randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them

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as follows: 294 amps, 30.8 volts for welder Sun Ti Yu and 292 amps, and 30.5 volts for welder Lin Zhi Hong with both having 400mm per min travel speed. The weld parameters appeared to comply with contract requirements.

The QA Inspector randomly observed ZPMC welder Jiang Jing Teng ID Number 046830, utilizing the SAW Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2221-L2C-S-1, to weld the fill and cover pass on butt splices of plate insert 40mm thick to edge plate 20mm thick for edge panel EP034-001-074. The QA Inspector randomly observed ZPMC CWI Wu Ming Cai, monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 486 amps, 30.4 volts with a travel speed of 416 mm per minute. Weld parameters appeared to comply with contract requirements.

All other welding related activities observed in this bay include power wire brushing of tack welds and weld surface area on a clamped and gantry(#1) mounted 3-open rib stiffener of deck panel DP011-001-002~007; back gouging of butt spliced plate and grinding after gouging of the same and taking off paint coating on various panel plates; drilling of 14-24mm diameter bolt holes on web of WT(W21x57) for various bottom plate BP191.

Bay 4: Tower Diaphragm

This QA Inspector randomly observed three ZPMC welder Li Meng Quan ID #054460, Shi Yan Hao ID #053605 and Li Shi Qiang welder 053609 utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly ESD1-SA317 weld joints 6A and 18A and NSD1-SA27 A/B-10A respectively. The QA Inspector randomly observed ZPMC CWI Zhao Chen Sun monitoring weld parameters.

This QA observed ZPMC MT personnel Wang Wei perform 100% Magnetic Particle Testing on fillet weld between 3-rib stiffener and deck panel DP121-001-001~006 and DP023-001-001~006. It was noted that rust and scale have been removed by ZPMC workers on weld areas prior MT testing. Electromagnetic Yoke was used with alternating current (AC) as power source. The detection media used was dry red ferromagnetic particles and applied with powder blower while the magnetizing force is on and in addition, magnetizing force is applied in perpendicular direction (180 degree apart). This QA also observed ZPMC's conduct of MT on these welds deemed acceptable.

Heat straightening was also observed on deck panel DP048(A)-001 weld joints 001~006 and DP047(A) weld joints 001~006 due to welding distortion. Oxy-acetylene gas was used and less than 650 degree C thermal heat input was implemented following procedure HSR1(B)-1322 and HSR1(B)-1321 respectively. Bending of heavy plates P1082(E)- 4/7 (J) and P1082(S)- 4/8(F) for diaphragm flanges using oxy-acetylene with thermal heat input of less than 650 degree C with the aid of welded jig and following procedure HSR(T)-128 and HSR(T)-129 respectively.

Bay 7: OBG - Floor Beam Sub Assembly

QA Inspector J. Lizardo randomly observed ZPMC qualified welder Jiang Zhen ID # 068912 groove welding fill pass on (flange to web plate) tee joint. Mr. Jiang was observed welding in the 2G (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic at floor beam FB016-010-043. QA Inspector Lizardo observed the ZPMC QC CWI Inspector Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the

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Welding Procedure Specification (WPS).

FCAW fillet welding (2F) was observed on stiffener to web plate on floor beam sub-assembly FB010-009 weld joints 022, 037 and 038 and FB011-006 weld joints 037, 038, 048, 061 and 022. ZPMC welders working on these were identified as Liu Long Xian ID# 044786 and Liu Kai Ge ID #044830. ZPMC CWI Hu Wei Qing was noted monitoring the parameters. SMAW tack welding was also noted on multiple stiffeners to web plate of floor beam FB027-022 weld joint 054, 055 and 056 using 4.0mm diameter, E7018 electrode.

Bay 8: Tower Diaphragm

This QA Inspector randomly observed two ZPMC welder Xie Chunfu ID number 045236 and Jiang Yong Sheng utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly ESD1-SA316 A/B-10B and ESD1-SA309-8B respectively. The QA Inspector randomly observed ZPMC CWI Lvliqing monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 210 amps, 26.1 volts with travel speed of 114mm/minute for welder Xie and 213 amps, 26.2 volts with travel speed of 116 for welder Jiang. Weld parameters appeared to comply with contract requirements.

The QA Inspector randomly observed ZPMC welder Wong Cai Li ID Number 045203, utilizing the Flux Cored Arc Welding (FCAW) Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2231-B-U2-F, to weld the fill pass on PJP corner joint between flange and web plate on longitudinal shear plate LD014-001-012. The QA Inspector randomly observed ZPMC CWI Hu We Qing, monitoring weld parameters. Tack welding/fit-up of unequal thickness (30mm:12mm) plate splice butt joint using 4.0mm diameter, TL-508 electrode by ZPMC welder Cao Tao ID #066163. This plate is intended for floor beam FB007-007-026 this QA observed.

Summary of Conversations:

No significant conversation occurred today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer
